What is claimed is:

1. A method for generating post-machining three-dimensional shape data indicative of a shape of a workpiece to be obtained after machining on the basis of an NC program including tool traveling path for a tool, tool shape data indicative of a shape of the tool and stock blank shape data indicative of a shape of a stock blank for the workpiece to be machined with the tool in an NC machine tool, the method comprising the steps of:

representing the shape of the stock blank for the workpiece by three-dimensional lattice point data comprising a multiplicity of lattice points arranged along three axes extending perpendicularly to each other on the basis of the stock blank shape data, the multiplicity of lattice points being each defined by three-dimensional coordinate data and connection information indicative of relationships between the each lattice point and lattice points located adjacent thereto along the three axes;

generating data indicative of a tool traveling region in which the tool is to move with respect to the workpiece on the basis of the NC program, the tool shape data and the stock blank shape data, then removing lattice points of the three-dimensional lattice point data located in the tool traveling region, and updating

connection information for the remaining lattice points; and

generating the post-machining three-dimensional shape data for the workpiece on the basis of three-dimensional coordinate data and the connection information for the remaining lattice points.

2. A three-dimensional shape data generating method as set forth in claim 1, further comprising the step of:

extracting surface lattice points defining surfaces of the workpiece to be obtained after the machining on the basis of the connection information for the remaining lattice points after the update of the connection information for the remaining lattice points,

wherein the post-machining three-dimensional shape data for the workpiece is generated on the basis of three-dimensional coordinate data and connection information for the surface lattice points.

3. A three-dimensional shape data generating method as set forth in claim 2, further comprising the step of:

defining squares by adjacent surface lattice points after the extraction of the surface lattice points, setting normal vectors on the respective squares, combining adjacent squares having parallel normal vectors with each other, and extracting optimum surface

lattice points which define greater-size squares obtained by combining the adjacent squares,

wherein the post-machining three-dimensional shape data for the workpiece is generated on the basis of three-dimensional coordinate data and connection information for the extracted optimum surface lattice points.

4. An apparatus for generating post-machining three-dimensional shape data indicative of a shape of a workpiece to be obtained after machining on the basis of an NC program including tool traveling path for a tool, tool shape data indicative of a shape of the tool and stock blank shape data indicative of a shape of a stock blank for the workpiece to be machined with the tool in an NC machine tool, the apparatus comprising:

a stock blank lattice point generating section which represents the shape of the stock blank for the workpiece by three-dimensional lattice point data comprising a multiplicity of lattice points arranged along three axes extending perpendicularly to each other on the basis of the stock blank shape data, the multiplicity of lattice points being each defined by three-dimensional coordinate data and connection information indicative of relationships between the each lattice point and lattice points located adjacent

thereto along the three axes;

a tool path processing section which generates data indicative of a tool traveling region in which the tool is to move with respect to the workpiece on the basis of the NC program, the tool shape data and the stock blank shape data, then removes lattice points of the three-dimensional lattice point data located in the tool traveling region, and updates connection information for the remaining lattice points; and

a shape data generating section which generates the post-machining three-dimensional shape data for the workpiece on the basis of three-dimensional coordinate data and the connection information for the remaining lattice points.

5. A three-dimensional shape data generating apparatus as set forth in claim 4, further comprising:

a surface lattice point extracting section which extracts surface lattice points defining surfaces of the workpiece to be obtained after the machining on the basis of the connection information for the remaining lattice points after the connection information for the remaining lattice points is updated by the tool path processing section,

wherein the shape data generating section generates the post-machining three-dimensional shape

data for the workpiece on the basis of three-dimensional coordinate data and connection information for the surface lattice points.

6. A three-dimensional shape data generating apparatus as set forth in claim 5, further comprising:

an optimizing section which defines squares by adjacent surface lattice points after the extraction of the surface lattice points, sets normal vectors on the respective squares, combines adjacent squares having parallel normal vectors with each other, and extracts optimum surface lattice points which define greater-size squares obtained by combining the adjacent squares,

wherein the shape data generating section generates the post-machining three-dimensional shape data for the workpiece on the basis of three-dimensional coordinate data and connection information for the extracted optimum surface lattice points.